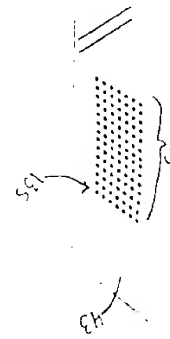


FIG. 1A

Validation - phase I

- verification of initial ---
- screening results
- establish cellular -----
- localization & anatomic
- distribution



50-200
series basic
arrays

FIG. 1B

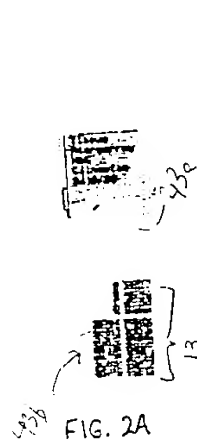


FIG. 2A

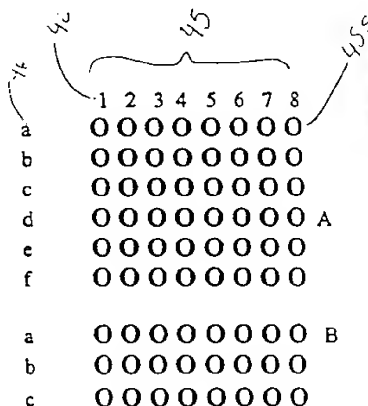
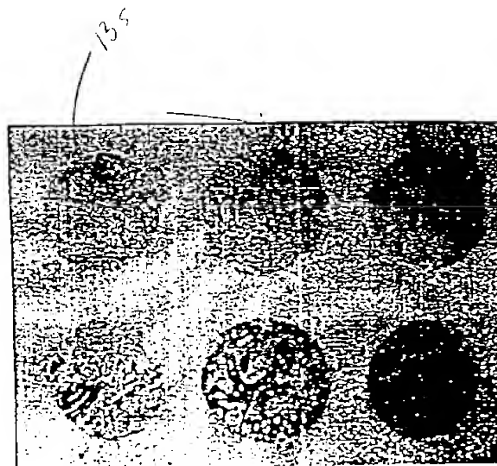


FIG. 2B



Six tissue elements from a PathWork™ Breast Array BR50 stained with CK7 showing selective staining (400X). Tissue elements are 0.6mm in diameter and spaced 0.3mm apart.

FIG. 2C

Sample Data Sheet Information (for one tissue element, located at A1a)
provided with every pathWorks™ Tissue MicroArray

Cat. #	BR50	Mitoses:	1
Lot #	07	PT:	1
Coordinates:	A1a	pN:	0
Organ:	Breast	LN pos	0
Category:	Breast cancer, ductal	LN all	23
Sex:	F	Tumor dia.	15
Age:	67	Surgery:	mastector
BRE Grade:	G2		
Tubuli:	3		
Polymorphy:	3		

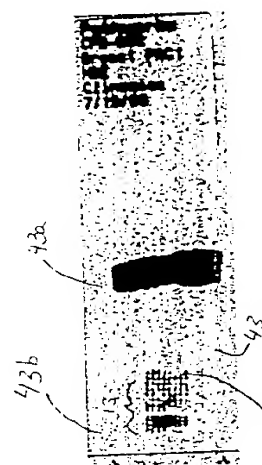
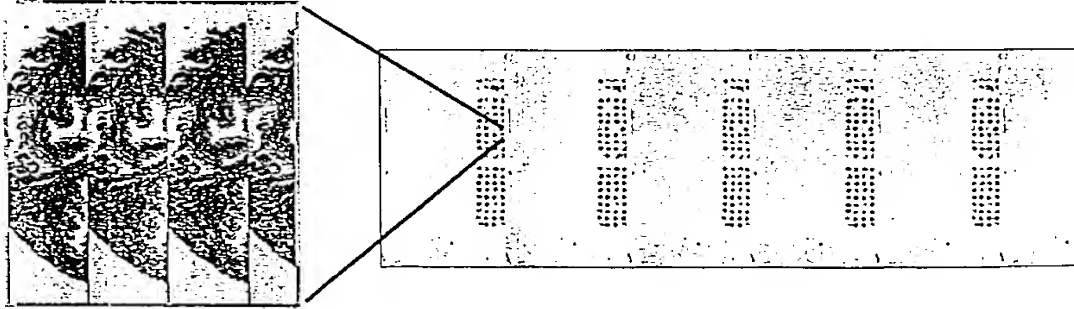


FIG. 2D

FIG 2E



Tissue MicroArrays

- Development of population databases
- High-throughput in situ analysis of DNA, RNA and protein
- Discovery of diagnostic and prognostic correlations
- Target prioritization

FIG. 3

FIG. 4A

Biorepository Database

coordinates on array	histology	HRE grade	tumor diameter	pT	pN	nodes examined	nodes pos	censor	months survival	age	horm therapy	chemo therapy	prop d	metast
1	distal	1						0	58	33				
1	metast	1	90	3	1	40	28	0	78	43	no	yes	no	
2	distal	2	60	3	2	10	6	0	29	54	yes	no	no	
1	distal	1	20	1	0	8	0	0	96	55	no	no	no	
1	distal	1	30	4	1	9	2	0	64	70	yes	no	no	
1	distal	1	30	4	1	14	8	0	43	44	no	yes	no	
1	distal	1	10	1	1	11	2	0	12	51				
3	distal	3	22	2	1	16	3	0	107	64	yes	no	no	
3	distal	3	30	2	3	4	4	0	21	48				
3	distal	3			3	2		0	28	49				
2	distal	2	40	2	1	13	5	0	55	69				
1	distal	1	40	2	2	12	9	0	73	44				
2	distal	2	30	4	2	10	7	0	85	70				
3	distal	3	30	4	0	14	0	0	80	79	no	no	no	

Medication and treatment histories, with outcomes, and expression profiles

FIG. 4B

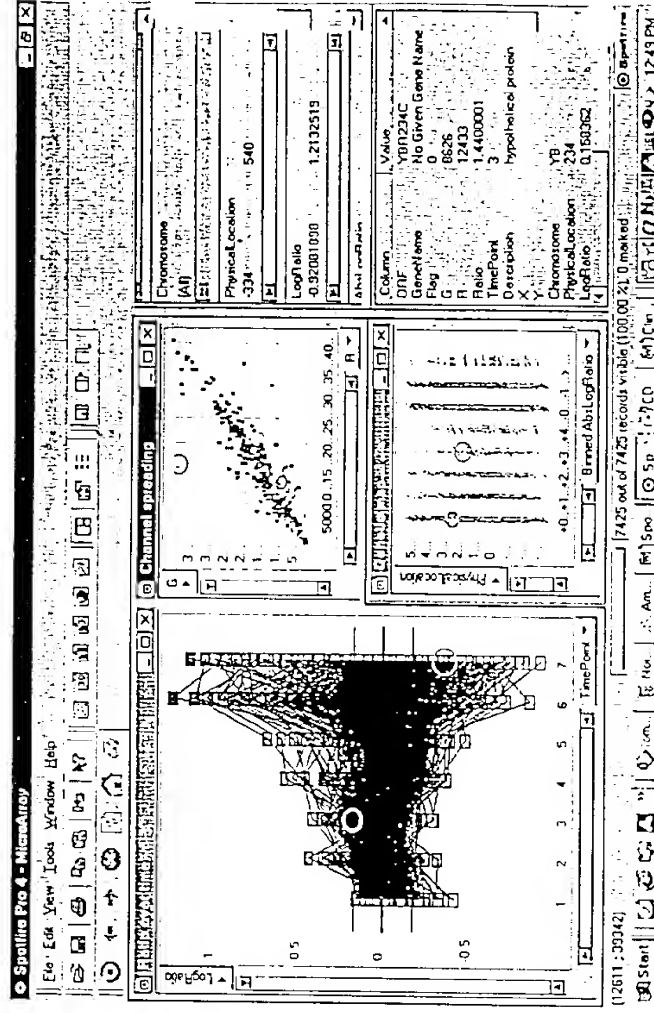
CLINOMICS

Biorepository Database

Sorting and selection of patient populations

Clustering analysis

Development of expression profiles vs. medical data



Clustering analysis

FIG. 4C

CLINOMICS

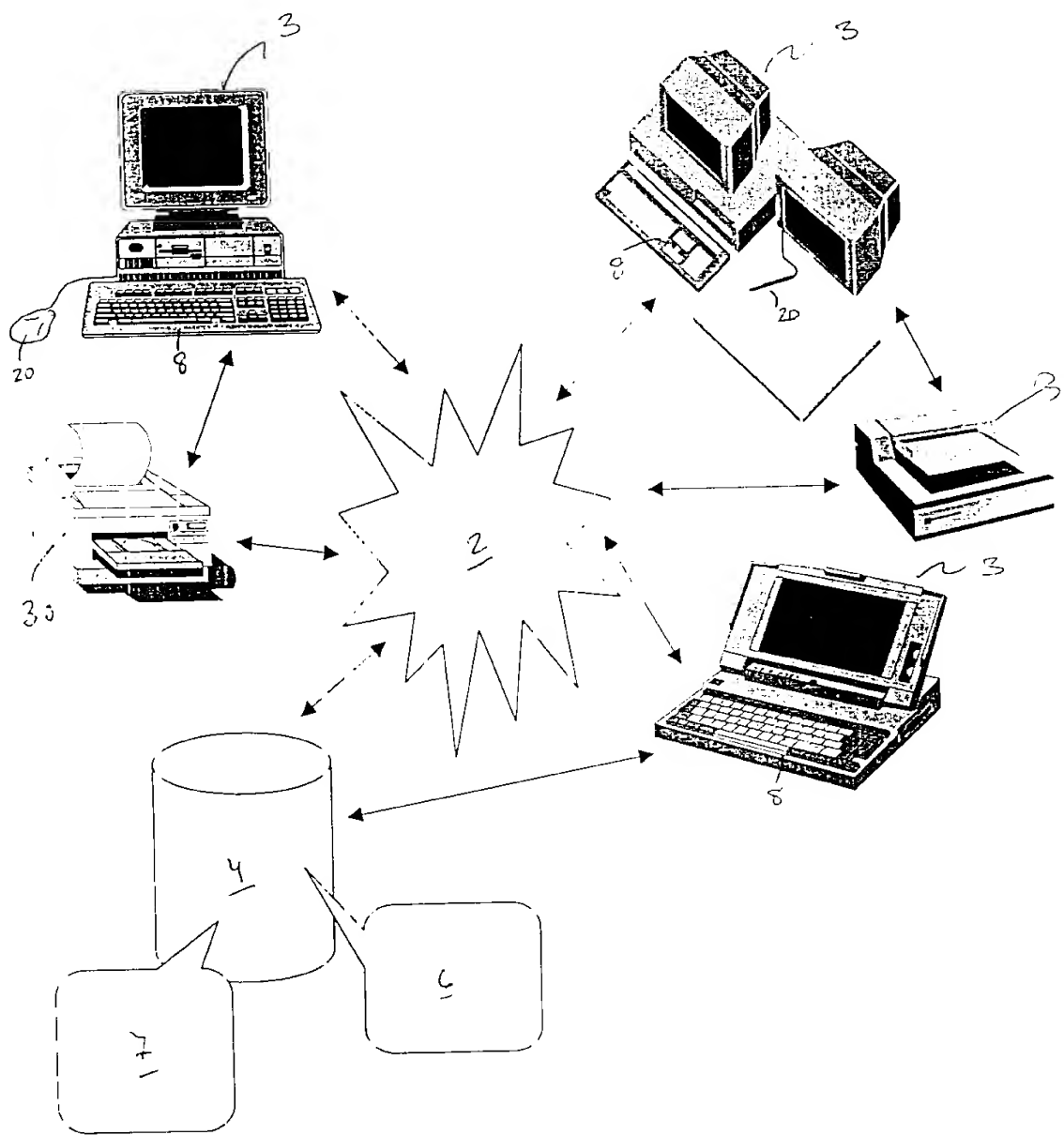


FIGURE 5

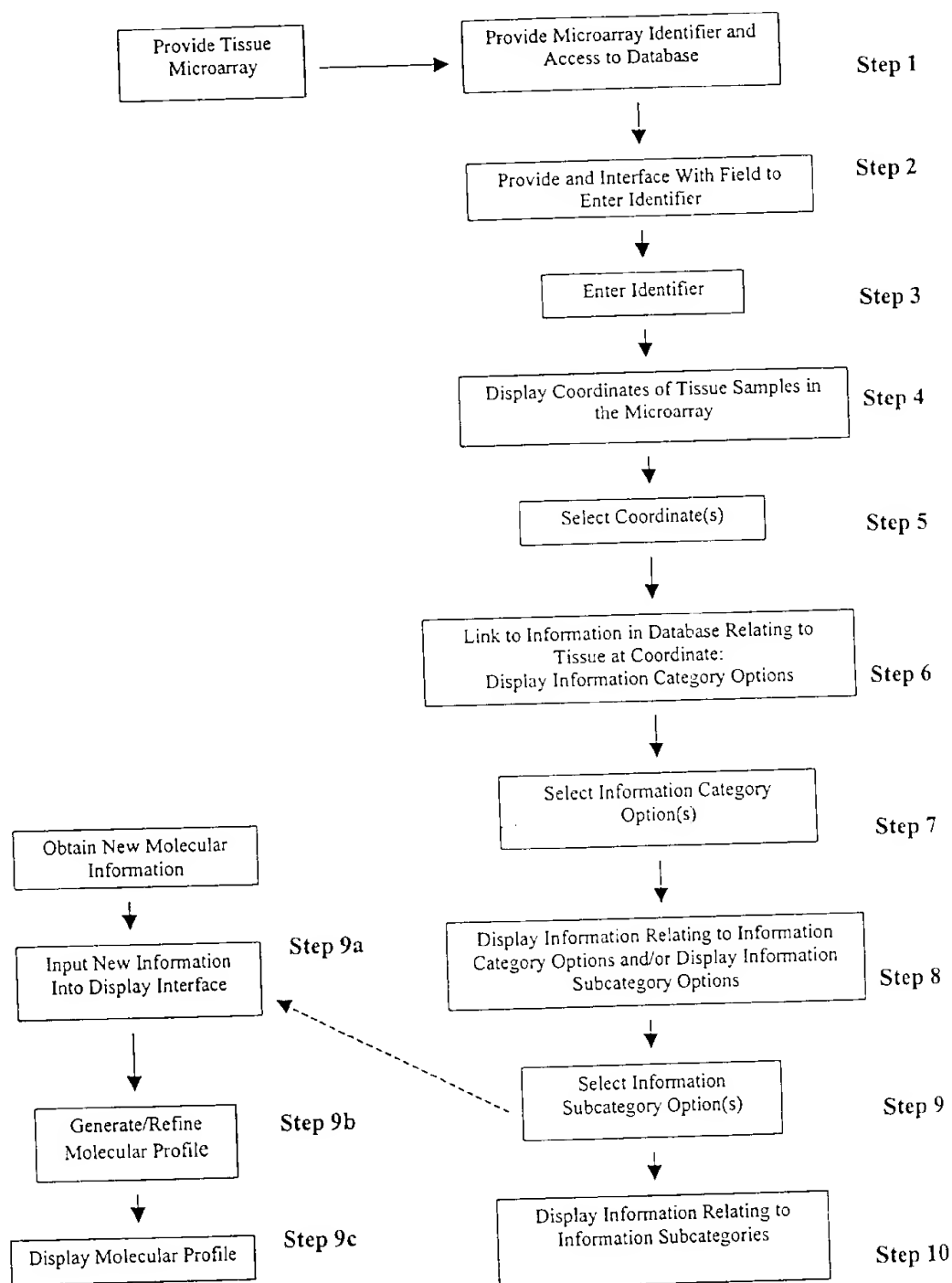


FIG. 6

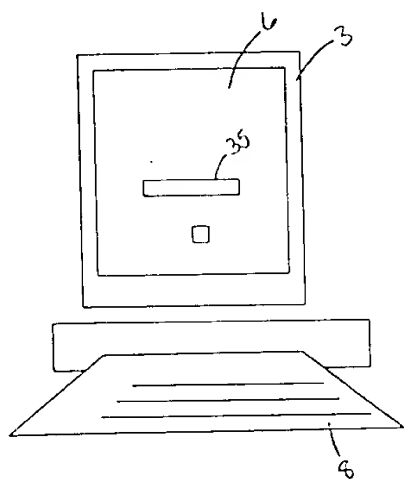


FIG. 7A

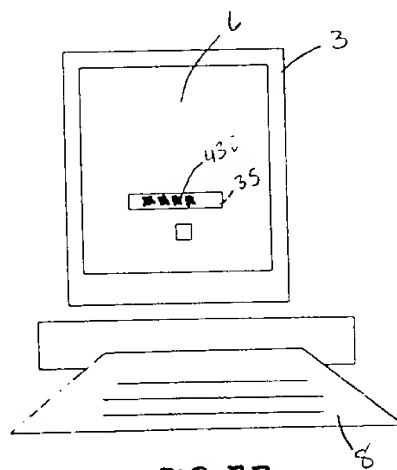


FIG. 7B

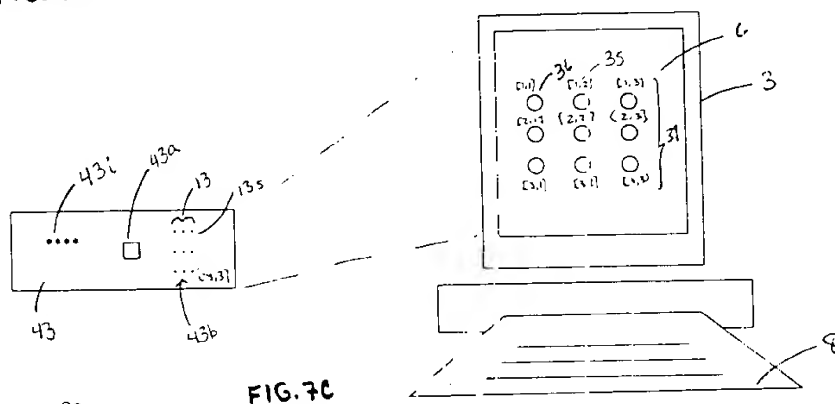


FIG. 7C

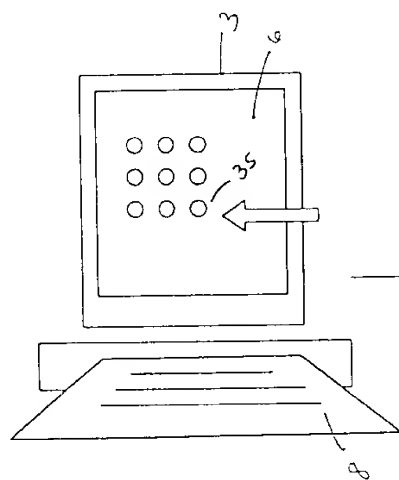


FIG. 7D

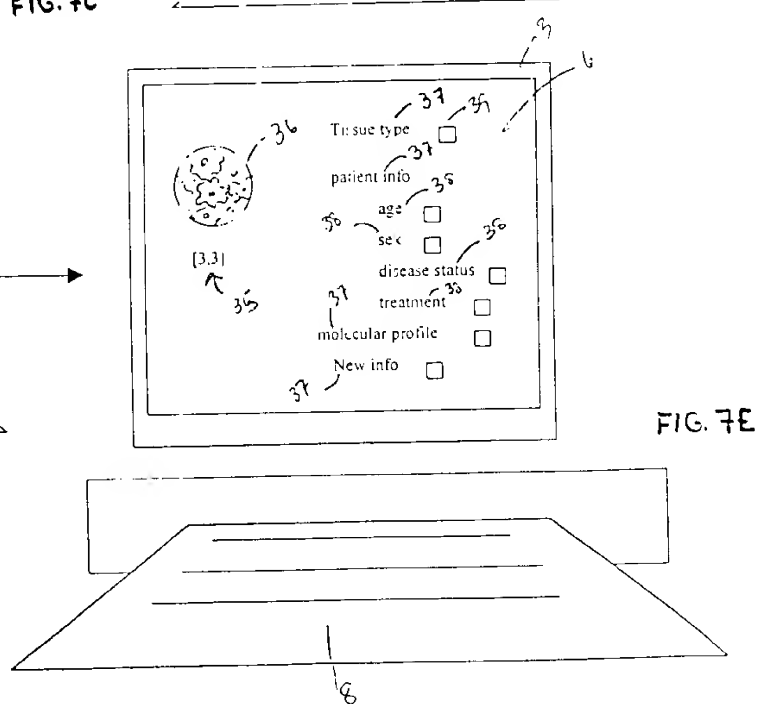
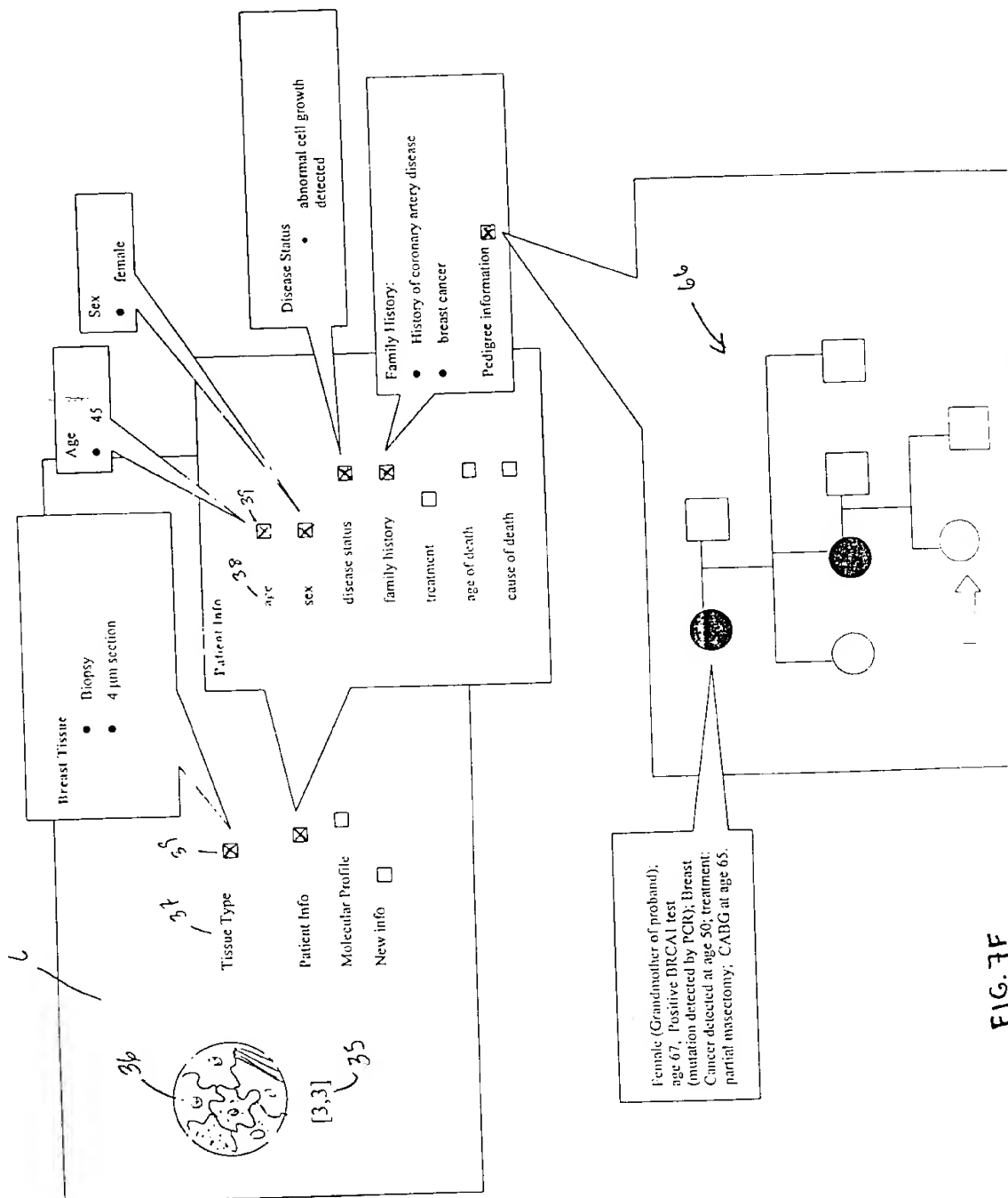


FIG. 7E



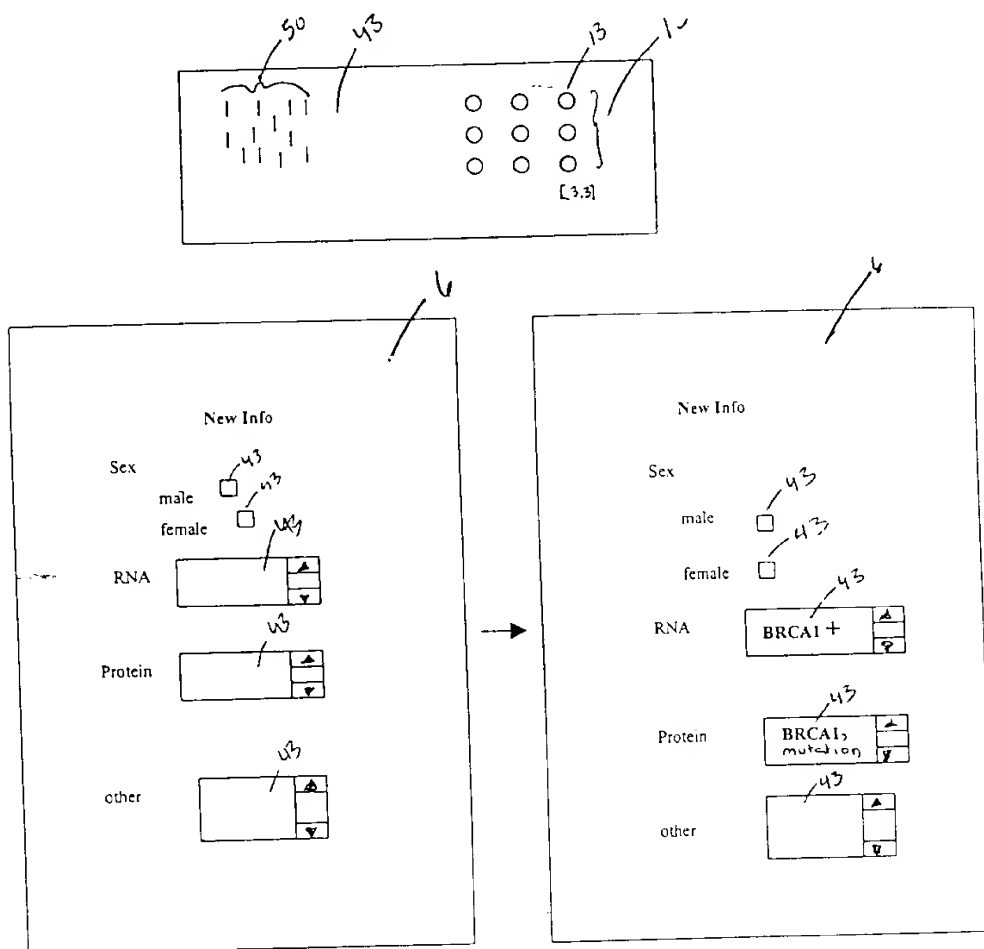


FIG. 7G

32

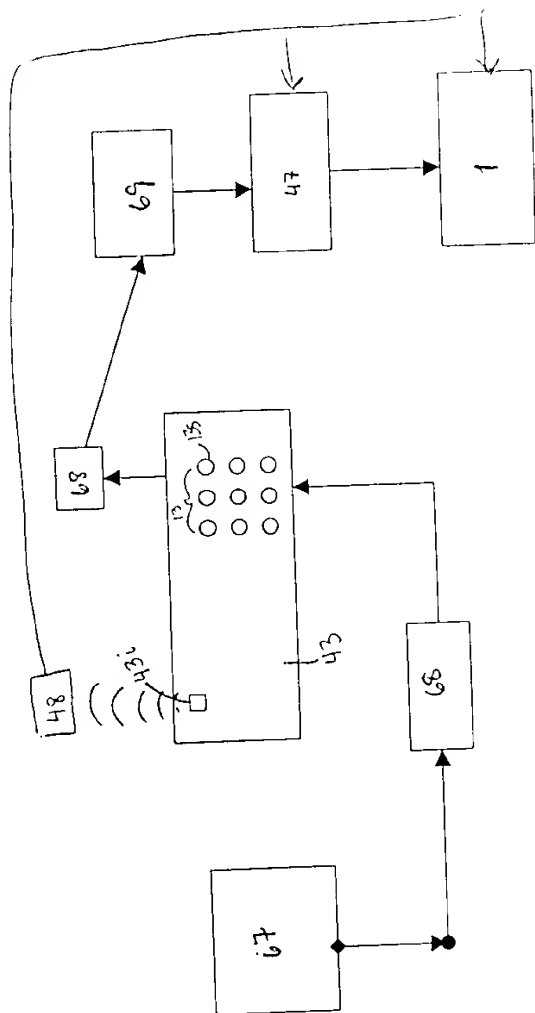


FIGURE 8

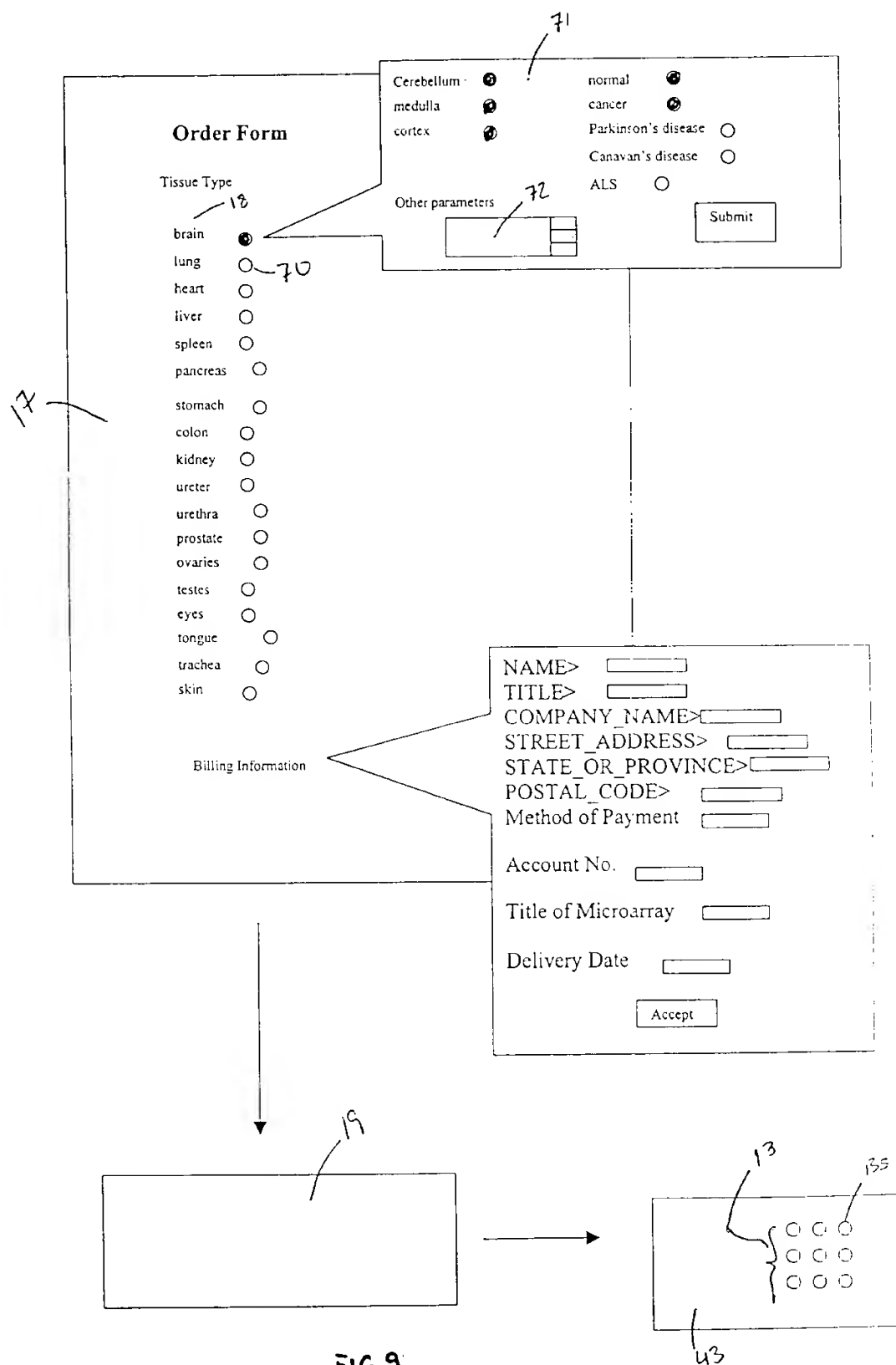


FIG. 9

FIGURE 11A

Microsoft Excel - CLINOHRT.xls

File Edit View Insert Format Tools Data Window Help

75%

02

	B	C	D	E	F	G	H	I	J	K	L	M	N
	POST MENOPAUSAL	63	F	CAU	10/98	NONE	NONE	UNK	NONE	UNK	UNK	SEX	
27	POST MENOPAUSAL	65	F	CAU	11/7/96	HUN/UM INSULIN/ LORTAB/ NORVASE/ CYCLOBENZAPRIN E	HYPERTENSION/ UTU DEPRESSION ALLERGY (PENICILLIN) ARTHRITIS/ DIABETES	HYSTERECTOMY	NONE	NEVER	NONE	SEX	
28	POST MENOPAUSAL	61	F	CAU	11/9/96	INDURAL/ DYAZIDE/ CHOLNEDS	DIABETES	HYSTERECTOMY	NONE	NEVER	NONE	SEX	
29	POST MENOPAUSAL	UNK	F	BLK	11/9/96	BLOOD PRESSURE PILLS	HYPERTENSION	HYSTERECTOMY (1991)	NONE	NEVER	NONE	SEX	
30	POST MENOPAUSAL	6/9/35	F	CAU	11/07/9	CINETIDINE/ GLUCOPHAGE/ GLYBURIDE	ARTHRITIS/ DIABETES	HYSTERECTOMY (1976)	NONE	NEVER	NONE	SEX	
31	POST MENOPAUSAL	1/31/15	F	CAU	11/07/9	ZANTAC/ ASPIRIN/ EQUATE	CARDIAL (1975-1993)	1955	NONE	NEVER	NONE	SEX	
32	POST MENOPAUSAL	9/10/15	F	CAU	11/07/9	NONE	NONE	1955	NONE	23 YRS AGO	NONE	SEX	
33	POST MENOPAUSAL	66	F	BLK	11/07/9	ANADIN	NONE	HYSTERECTOMY (1992)	NONE	NEVER	NONE	SEX	

CLINOHRT/

11

NUM

Ready

Start

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Microsoft

4:13 PM

A. Raw Clinical History Data Retrieved from the Clinomics Biorepository Database.

Spotfire Pro 4 - CLINOHRT3.xls

File Edit View Tools Window Help

CONCURRENT CONDITIONS (A3)

MENSTRUAL STATUS (A3)

HORMONE REPLACEMENT THERAPY

☒ NONE

Column	Value
Clinomics LOT NO	9701-027-2542
SAMPLE TYPE	POST MENOPAUS.
DOB	59
AGE	F
SEX	BLK
ETH	11/07/96
DOD	INSULIN/ISTELAZI
MEDICATIONS	HYPERTENSION/1
CONCURRENT CONDITIONS	1988
MENSTRUAL STATUS	NONE
HORMONE REPLACEMENT THERAPY	8 YRS AGO LIGHT
SMOKING HISTORY	NONE
ALCOHOL HISTORY	SERUM
MATRIX	22
AVAIL VOL AS OF (8/20/98)	

(1979: ZANTAC/ASPIRIN/EQUATE)

73 out of 73 records visible (100.00%). 0 marked

Start Norton System Do. CD Player - [05] 0 Spotfire Pro 4 ... 10:27 PM

FIGURE 11B

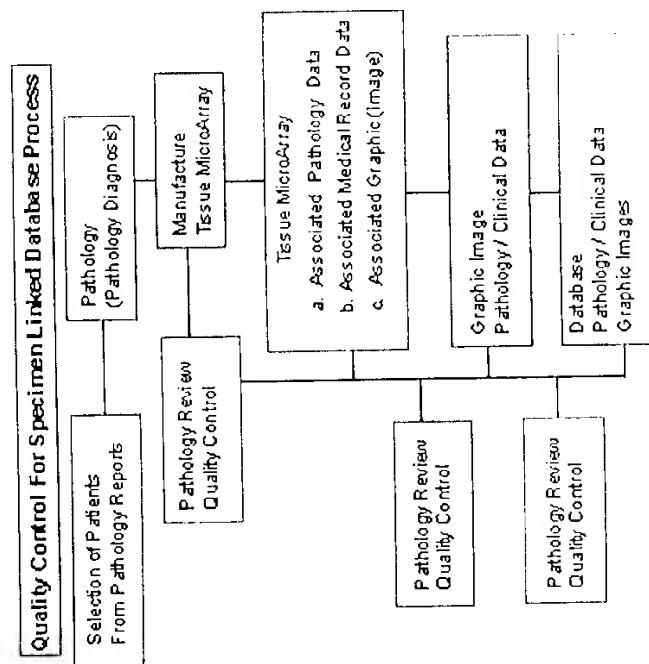


FIGURE 12

Figure 13

SNO-MED ANASITE NUMBERS			
T.02 SKIN	T.41 ARTERY, GENERAL	T.77 PROSTATE	T.Y1 TRUNK, PERINEUM
T.03 SUBCUTANEOUS TISSUE	T.42 AORTA	T.78 TESTES, TUNICA VAGINALIS	T.Y2 THORACIC, DIAPHRAGM
			MEDIASTINUM
T.04 BREAST	T.43 CORONARY ARTERY	T.79 SCROTUM, SPERM CORD	T.Y3 THORACIC VISCERA
		EPIDIDYMIS, VAS DEF	T.Y4 ABDOMEN, PERITONEU
			RETROPERITONEUM
T.06 BONE MARROW	T.44 PULM. ARTERY	T.80 VULVA, LABIUM, CLITORIS	T.Y6 PELVIS
		BARTHOOLINS GLAND	T.YX PERITONEAL FLUID
T.07 SPLEEN	T.45 VERT. CAROTID, CEREBR. TEMPOR.	T.81 VAGINA, HYMEN	T.Y1 SYNOVIAL FLUID
	BASILAR ARTERIES		T.2X UPPER RESP FLOS
T.08 LYMPH NODES	T.46 ILIAC, RENAL, MESSENERIC ARTERY	T.82 UTERUS	T.2Y LOWER RESP FLOS
T.09 LYMPHATICS	T.47 POPLITEAL ARTERY	T.83 CERVIX	T.6X GI FLOS. SPACES
T.11 BONE	T.48 VEIN	T.84 ENDOMETRIUM	T.6Y GI CONTENTS
T.12 SYNOVIUM, JOINT	T.49 VEIN	T.85 MYOMETRIUM	T.7X URINE TRA FLD. SPACE
T.13 MUSCLE	T.50 DIGESTIVE SYSTEM	T.86 FALLOPIAN TUBE	T.7Y MALE GENT FLD. SPACE
T.15 CARTILADGE	T.51 MOUTH, PALATE, ORAL	T.87 OVARY	T.8X FEM. GENT FLD. SPACE
T.16 BURSA	T.52 LIP	T.88 PLACENTA, UMBCORD	T.8Y PLACENTA, FETAL FLD
T.17 TENDON	T.53 TONGUE	T.89 FETUS	T.XO NERVOUS SYSTEM
T.18 LIGAMENT, FASCIA	T.54 GUM, TOOTH, GINGIVA	T.91 PITUITARY	T.YO BODY AS A WHOLE
T.19 SOFT TISSUE	T.55 PAROTID, SALIV GLND	T.93 ADRENAL	
T.21 NOSE	T.56 LIVER	T.96 THYROID	
T.22 SINUS, ACCESSORY	T.57 GALLBLADDER	T.97 PARATHYROID	
T.23 NASOPHARYNX	T.58 EXTRAHEPATIC BILE DUCT	T.98 THYMUS	
T.24 VOC. CRD. LARY, EPIGLT	T.59 PANCREAS	T.99 ISLET OF LANGERHANS	
T.25 TRACHEA	T.60 PHARYNX	T.OX BLOOD	
T.26 BRONCHUS	T.61 TONSIL, ADENOIDS	T.1X FIBRO. ADIPOSE TISSUE	
		CONNECTIVE TISSUE	
T.27 BRONCHIOLE	T.62 ESOPHAGUS	T.Y8 UPPER EXTREM.	
T.28 LUNG	T.63 CMENTUM, STOMACH, PYLORUS	T.Y9 LOWER EXTREM.	
T.29 PLEURA	T.64 SM. INTEST. DUODENUM	T.XY EAR	
T.30 CARDIO VAS SYS	T.65 JEJUNUM, ILEUM	T.XX EYE	
T.31 PERICARDIUM	T.66 APPENDIX	T.X1 INTRACRAN. MENINGES	
		CSF, DURAL, VENTRIC SYS	
T.32 HEART	T.67 COLON, MESSENERY	T.X2 CEREBRAL, BRAIN	
		CORPUS CALLOSUM	
T.33 MYOCARDIUM	T.68 RECTUM	T.X3 BASAL GANGLIA	
T.34 ENDOCARDIUM	T.69 ANUS	T.X4 THALAMUS	
T.35 CARDIAC VALVE	T.71 KIDNEY	T.X5 PONS, MIDBRAIN	
T.36 TRICUSPID VALVE	T.72 RENAL PELVIS, COCCYX	T.X6 CEREBELLUM	
T.37 PULMONIC VALVE	T.73 URETER	T.X7 SPINAL CORD	
T.38 MITRIAL VALVE	T.74 BLADDER	T.X8 CRANIAL NERVE, OPTIC	
T.39 AORTIC VALVE	T.75 URETHRA	T.X9 NERVE, VAGUS NERVE	
T.40 BLOOD VESSELS	T.76 PENIS	T.YO SCALP, ORBITAL	

FIGURE 14A

SNO-MED DIAGNOSIS NUMBERS CARCINOM	
ADENOCARCINOMA	M.8143
ADENOCARCINOMA, ANAPLASTIC	M.8233
ADENOCARCINOMA, CLEAR CELL	M.8313
ADENOCARCINOMA, COLLOID	M.8483
ADENOCARCINOMA, CYSTIC	M.8443
ADENOSQUAMOUS CARCINOMA	M.8563
ADENOCARCINOMA, IN-SITU	M.8142
ADENOCARCINOMA, MUCINOUS CYST	M.8473
ADENOCARCINOMA, PAPILLARY	M.8263
ADENOCARCINOMA, UNDIFFER.	M.8233
ADENOCARCINOMA, SIGNET RING	M.8493
ARRHENBLASTOMA	M.8630
ANAPLASTIC MALIGNANCY	M.8003
ASTROCYTOMA, GRADE 1	M.9403
ASTROCYTOMA, GRADE 2	M.9433
ASTROCYTOMA, GRADE 3 & 4	M.9443
ADNEXAL CARCINOMA	M.8393
ANAPLASTIC CARCINOMA	M.8023
ADENOID CYSTIC CARCINOMA	M.8203
ADAMANTINOMA	M.9310
ALVEOLAR CARCINOMA	M.8253
ACINAR TUMOR	M.8001
ACINAR CARCINOMA	M.8553
BASAL CELL CARCINOMA	M.8093
BRONCHIOLAR CARCINOMA	M.8253
BASALOID TRANSITIONAL CARCINOMA	M.8123
BASAL CELL EPITHELIOMA	M.8090
CARCINOMA	M.8013
CARCINOMA, COLLOID	M.8483
CARCINOMA, IN-SITU	M.8012
CARCINOMA, PAPILLARY	M.8053
CARCINOMA, SMALL CELL	M.8043
CARCINOSARCOMA	M.8983
CARCINOID, MALIGNANT TUMOR	M.8243
CARCINOMA, UNDIFFERENTIATED METS	M.8023
CARCINOMA, UNDIFFERENTIATED	M.8023
CHORIOCARCINOMA	M.9103
CARCINOID TUMOR	M.8241
CHOLANGIOCARCINOMA	M.8163
CHONDROSARCOMA	M.9223
CHONDROBLASTOMA	M.9230
CRANIOPHARYNGIOMA	M.9351
CYLINDROMA	M.8203
CYSTADENOCARCINOMA PAPILLARY SEROUS	M.8463
CYSTADENOCARCINOMA, PAPILLARY	M.8453
DERMATOFIBROSARCOMA	M.8823
DYSPLASIA	M.7600
DUCTAL, INFILTRATING CARCINOMA	M.8503
EPENDYMOMA	M.9391

FIGURE 14B

EPIDERMOID CARCINOMA	M.8073
EMBRYONAL CELL CARCINOMA	M.9073
EPITHELIOMA	M.8110
EWINGS SARCOMA	M.9263
FIBROSARCOMA	M.8823
FOLLICULAR CARCINOMA	M.8333
GIANT CELL SARCOMA	M.8803
GIANT CELL TUMOR	M.9040
GRANULOSA CELL TUMOR	M.8621
GLIOBLASTOMA, MULTIFORME	M.9443
GLIOMA	M.9383
GIANT CELL CARCINOMA	M.8033
HEMANGIOBLASTOMA	M.9161
HEPATOBLASTOMA	M.8973
HISTOCYTOMA	M.8830
HODGKINS	M.9653
HODGKINS SARCOMA	M.9683
HURTLE CELL CARCINOMA	M.8363
ISLET CELL CARCINOMA	M.8153
KAPOSI SARCOMA	M.9143
LEUKEMIA, ACUTE MYELOGENOUS	M.9865
LEUKEMIA, LYMPHOMA	M.9826
LEUKEMIA	M.9807
LEUKEMIA, CHRONIC LYMPHOMA	M.9827
LEIOMYOSARCOMA	M.8893
LYMPHOMA, LYMPHOCYTIC	M.9633
LYMPHOMA, LYMPHOCYTIC	M.9593
LYMPHOMA, GIANT FOLLICULAR	M.9693
LYMPHOSARCOMA, LYMPHOCYTIC	M.9623
LYMPHOMA, MALIGNANT	M.9593
LYMPHOMA, HISTIOCYTIC	M.9643
LYMPHEPITHELIOMA	M.8083
LYMPHOMA, T-CELL	M.9703
LYMPHOSARCOMA, LYMPHOCYTIC	M.9613
LIPOSARCOMA	M.8853
LYMPHOMA, STEM CELL	M.9603
MALIGNANT MELANOMA SPINDLE CELL	M.8773
MENINGIOMA	M.9530
METASTATIC CARCINOMA	M.8016
MALIGNANT TUMOR	M.8003
METASTATIC MALIGNANT TUMOR	M.8006
MEDULLOBLASTOMA	M.9473
MALIGNANT MELANOMA	M.8723
MALIGNANT CELLS	M.6972
MYOBLASTOMA	M.9370
MUCOEPIDERMOID CARCINOMA	M.8433
MALIGNANT CARCINOID TUMOR	M.8243
MALIGNANT MESENCHYMOMA	M.8993
MESOTHELIOMA	M.9051
MYELOMA	M.9733
METASTATIC MELANOMA	M.8733

FIGURE 14C

MALIGNANT GRANULOSA CELL TUMOR	M.8623
MALIGNANT PHEOCHROMOCYTOMA	M.8703
MALIGNANT MESOTHELIOMA	M.9053
METASTATIC LEIOMYOSARCOMA	M.8893
MESODERMAL TUMOR	M.8953
MIXED TUMOR	M.8940
NEUROBLASTOMA,NEUROEPITHELIOMA	M.9503
NECROTIC TUMOR	M.5443
NEUROBLASTOMA,NEUROEPITHELIOMA	M.9503
OLIGODENDROGLIOMA	M.9453
OAT CELL CARCINOMA	M.8043
OSTEOBLASTOMA	M.9200
OSTEOMA	M.9180
OSTEOSARCOMA	M.9183
OSTEOIDOSTEOMA	M.9190
OSTEOCHONDROMA	M.9210
PAPILLARY CARCINOMA	M.8053
PLASMA CELL MYELOMA	M.9733
PAPILLARY METASTATIC CYTADENOCARCINOMA	M.8463
PAPILLARY TRANSITIONAL CELL CARCINOMA	M.8133
RENAL CELL CARCINOMA	M.2485
RETICULUM CELL SARCOMA	M.9643
RENAL CLEAR CELL CARCINOMA	M.8313
SQUAMOUS CELL CARCINOMA	M.8073
SARCOMA,RETICULAR CELL	M.8316
SQUAMOUS EPITHELIAL TUMOR	M.8070
SQUAMOUS CELL CARCINOMA IN-SITU	M.8072
SARCOMA,UNDIFFERENTIATED GIANT CELL	M.8803
SARCOMA,RETICULAR CELL	M.9643
SPINDLE CELL CARCINOMA	M.8033
SEMINOMA	M.9063
STROMAL SARCOMA	M.8933
TUMOR	M.8001
TUMORLET	M.8043
THYMOMA MALIGNANT	M.8583
TRANSITIONAL CELL CARCINOMA	M.8123
TERATOMA	M.9081
VERRICOUS SQUAMOUS CARCINOMA	M.8053

FIGURE 15

BRAIN INVENTORY CLASSIFICATIONS									
PATHOLOGY	TISSUE	DOB	AGE	SEX	MEDICAL HISTORY	ICD-9-CM	DSM-IV-T	MEDICATIONS	METHOD
AU-99-47	Brain (organic)	04/08/1981	18	M	Multiple traumatic injuries sustained in a motor vehicle accident. Open skull fractures.		291.89	N/A	FFPE
					brain contusions	851.80			
					subarachnoid hemorrhage, pericardial tear.	852.00			
					bilateral pneumothoraces, contusions of heart.	860.0			
					Blood alcohol level 95 mg/dl				
AU-99-61	Brain (organic)	04/26/1972	27	F	Pregnancy induced hypertension	401.9	293.83	Betamethasone	FFPE
					Thyroiditis	245.9		Magnesium sulfate	
					Asthma	493.90		Pitocin	
					Severe pre-eclampsia	642.0		Apresoline	
					Anoxic encephalopathy	437.2		Mannitol	
					Intracerebral hemorrhage	431			
					Hemorrhage of right putamen				
					Hypertensive cerebral edema	348.5			
					Diffuse anoxic changes				
AU-99-80	Brain (organic)	12/27/1947	52	F	Breast cancer	174.9	293.83	N/A	FF
					Idiopathic cardiomyopathy	425.40			
					Chronic congestive heart failure	425.00			
					Anaphylactic shock secondary to Taxol administration.				
					Severe hypoxia and brain death				
AU-99-82	Brain (psych)	09/05/1957	42	M	Chronic pain	307.89	307.89	N/A	FFPE
					Drug abuse	305.90			
					Severe coronary artery sclerosis	414.00			
					Old myocardial infarction.				
					Cardiomegaly				
AU-99-84	Brain (psych)	05/10/1960	39	F	Severe chronic alcoholism		291.89	N/A	FFPE
					Previous hospital admission for alcohol intoxication and major depression	305.00			
					Severe ascites (4,000 ml.)				
					Hepatomegaly (liver 1,690gm.)				
					Severe cirrhosis	571.2			
AU-99-90	Brain (psych)	04/19/1962	37	M	Multiple traumatic injuries sustained in a motor vehicle accident. Avulsion of soft tissue.				
					bone and brain.				
					Multiple comminuted open fractures of the skull.				
					Alcohol intoxication				
					Blood ethanol level 252 gm %				
AU-99-91	Brain (organic)	01/09/2028	71	M	Prostate cancer	185	293.83	N/A	FFPE
					Squamous cell cancer of lung	162.9			
					Ventricular peritoneal shunt secondary to progressive				
					hydrocephalus from brain mass	331.3			
					Hypertension	401.9			
					headaches				
					Unsteady gait				
					Mental confusion				
					Metastatic squamous cell cancer to liver, spleen, kidneys, and brain.	197.7			
					Emphysema	492.3			
					Atherosclerosis of coronary arteries				
AU-99-93	Brain (psych)	05/01/1958	41	M	Morbid obesity	278.00	303.00	ecupri Colchicine Napro	FFPE
					Hypertension	401.9	291.89		
					Gout	274.9			
					Chronic pain syndrome				
					Depression				
					Acute myocardial infarction	410.90			
					Acute alcohol intoxication				
					Cardiac hypertrophy				
					Micronodular cirrhosis	571.2			
AU-99-94	Brain (psych)	#####	50	F	Ethanol abuse		305.00		
					Hypertension	401.9			
					Elevated liver enzymes				
					Micronodular cirrhosis	571.2			
					Severe ascites (51L)				
					Splenomegaly				
					Emphysema	492.8			